Reproductive Quarterly

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In this newsletter:

Factor V Leiden and Reproductive Health

By Laurie Baksh, MPH

Background

Factor V Leiden is the most common hereditary blood coagulation disorder in the United States. The Factor V Leiden mutation is a single point mutation of glutamine to arginine in the factor V gene. This makes the person with the mutation resistant to activated protein C (a natural anticoagulant), leading them to be predisposed to developing blood clots. More than 95% of cases of activated protein C resistance are due to the Factor V Leiden mutation.[1] Discovered in 1994, it has been estimated that about 5% of Caucasians have the mutation.[2] The frequency of the mutation is lower in most other races, ranging from being virtually absent in most Asian populations, to less than 1% in African-Americans.[2]

"...it has been estimated that about 5% of Caucasians have the mutation."

It is estimated that those who are heterozygous for the mutation (one mutated gene) have seven times the risk of developing a venous thrombosis than those who do not have the mutation. For those who are homozygous for the mutation (both genes mutated), their risk increases by 80-fold.[2]

Why is it important to know if a woman has the factor V Leiden mutation?

In the U.S.,[3] and in Utah,[4] pulmonary embolism is one of the leading causes of maternal morbidity and mortality. Being pregnant and using oral contraceptives can induce an acquired resistance to activated protein C, making clotting more likely. Thus, having the factor V Leiden mutation in these states increases the risks for thrombosis even more.

The relative risk of thrombosis for women who are heterozygous positive for the Leiden mutation and were using oral contraceptives (OCs) was 34.7, meaning their risk of developing a clot when using OCs was almost 35 times (See Factor V, page 2).

Factor V (from p. 1)

greater than women who did not have the mutation and weren't using OCs.[2] This risk rises to almost 80 times greater for women who are homozygous positive for the mutation and using OCs.[5]

Having the Factor V Leiden can complicate pregnancies and has been linked to recurrent miscarriage, fetal loss, preeclampsia, HELLP syndrome, intrauterine growth restriction, placental insufficiency, and placental infarctions.

What can be done?

It is impractical to screen all reproductive aged women for the Leiden mutation since the Factor V Leiden screening costs about $325. A less expensive test, the Activated Protein C (APC) Resistance test, is a good indirect measure for Factor V Leiden and costs about $70. Most practitioners will begin with the APC test and if it is positive, will order the Factor V Leiden screening test. However, the APC test may not be accurate for women who are currently pregnant or using OCs, as these women can have acquired resistance to APC. The APC Resistance test should not be used on patients who are using anticoagulants.

A good personal and family history regarding thrombosis, pulmonary embolism, stroke, and heart attack may alert a healthcare provider to the possibility the client or their family members may have the mutation. This history should be taken before prescribing oral contraceptives, at preconceptional visits, and at initial prenatal care visits. An inherited abnormality should be suspected if a history of clotting appears in someone who is young, has a family history of clotting, has repeat episodes of clotting, or has clotting in unusual sites.[6]

If a patient is found to have a personal or family history of thrombosis, the client's physician should be notified. The provider may want to take caution in prescribing combined estrogen and progestin contraceptives.[7] If the patient is pregnant, she will most likely be referred to a perinatologist, if one is available. If a patient is found to be a carrier of the Leiden mutation, they should be given genetic counseling on their, and their family's, risk of thrombosis, use of oral contraceptives, complications related to pregnancy, and the chances of their offspring inheriting the condition.

It should be noted that not all people with the Leiden mutation will need to be treated and that prevention is different for each patient. Treatment of patients with factor V Leiden depends upon the patient's risk of clotting and their family history. Common treatment for patients with the mutation who are at high-risk periods for thrombosis (pregnancy, surgery, trauma, or immobilization) is anticoagulation with medications such as heparin, warfarin, and low-molecular weight heparins. Anticoagulation therapy may be short term or long term, depending upon the patient's clotting history.

Conclusion

A relatively new discovery, there is much to be learned about the Factor V Leiden mutation and its impact on women's reproductive health. Because routine screening is not recommended, practitioners should rely on taking a good personal and family health history. Women identified with the mutation should be referred to a provider knowledgeable about the mutation. Reproductive aged women with the mutation should be given genetic counseling, counseled on their contraceptive choices, and if they choose to become pregnant, be followed closely in their pregnancy.

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The Intergenerational Obstetric History: A Critical Component of Risk Assessment

By Lois D. Bloebaum, RN, BSN

It has been well established that a woman's personal obstetrical history is an important component of a prenatal risk assessment. A clinician would be considered remiss if he/she failed to document a woman's gravidy and parity, as well as their history of previous pregnancy outcomes. Another significant piece of the prenatal risk assessment is questions related to family medical history such as hypertension, diabetes, etc. Recently published research conducted here in Utah suggests that an additional critical component of the prenatal risk assessment should include questions related to a woman's family obstetric history.

Faculty from the University of Utah have documented an intergenerational predisposition to operative delivery, preterm birth and preeclampsia utilizing a linked database of Utah birth certificates that encompasses two distinct cohorts. The cohorts consist of an offspring cohort comprised of births occurring between 1970-1991 and a parental cohort comprised of births occurring between 1947-1957. In three separate studies, these data indicate the importance of the intergenerational obstetric history.

The first study determined that a woman who was herself delivered by cesarean had a significantly increased likelihood of delivering by cesarean. In addition, a woman who was herself delivered by mid or high forceps also had a significantly increased likelihood of delivering by cesarean.[1]

The second study was carried out to define the extent to which maternal predisposition influences the risk of preterm birth in women who themselves were born before term. This study found that women who themselves were born before 37 weeks' gestation had a significantly increased likelihood of preterm delivery of their own offspring. In addition, it was found that the risk of preterm birth increased as maternal gestational age at birth decreased, more than doubling for women born before 32 weeks gestation.[2]

The third study was designed to determine whether the offspring of men and women who themselves were the product of pregnancies involving preeclampsia were more likely to experience pregnancies that were complicated by preeclampsia (themselves or with their spouse). The first study group consisted of men who had been born of pregnancies complicated by preeclampsia, and the second study group consisted of women who had been born of pregnancies complicated by preeclampsia. Among the offspring of the male study group, having a father who was the product of a pregnancy complicated by preeclampsia was associated with an increased risks of being a product of a pregnancy complicated by preeclampsia (O.R. 2.1). In the female study group, it was found that women who were the product of a pregnancy complicated by preeclampsia were three times as likely to have preeclampsia as women in the control group.

These Utah data strongly suggest that the addition of questions related to a woman's obstetric family history may allow the prenatal healthcare provider to predict which women are at risk for preterm birth, preeclampsia and operative deliveries and intervene at an earlier point, resulting in better outcomes for both mother and baby.

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Unintended Pregnancy in Utah

By Laurie Baksh, MPH, Kirsten Davis, BS, Theresa Davis, BS, Lois Bloebaum, RN, BSN, Nan Streeter, MS, RN, Karrie Galloway, Bob Rolfs, MD, MPH

Background

In the United States, unintended pregnancy is a major public health problem. Unintended pregnancy is a general term that includes pregnancies that a woman states were either mistimed or unwanted at the time of conception.[1] It was estimated that 49% (2,648,830) of all pregnancies (excluding miscarriages) in 1994 were unintended. Over half of the unintended pregnancies (1,430,367) in 1994 ended in abortion.[2] Unintended pregnancies are more likely to occur if the mother is an adolescent, unmarried, over age 40,[1] or has experienced abuse in childhood.[3] Women with an unintended pregnancy are less likely to seek early prenatal care or receive adequate prenatal care, are more likely to expose the fetus to harmful substances such as cigarette smoke and alcohol,[1] and are less likely to initiate and maintain breastfeeding.[4]

Methodology

Data in this newsletter were provided by the Utah Pregnancy Risk Assessment Monitoring System (PRAMS). PRAMS is an ongoing, population-based risk factor surveillance system designed to identify and monitor selected maternal experiences that occur before and during pregnancy and experiences of the child's early infancy. The PRAMS data here represent all live births to Utah residents in 1999. Utah PRAMS data from 1999 were analyzed using chi-squared tests to identify factors that may contribute to unintended pregnancy.

For this article, unintended pregnancies included pregnancies that were reported as being mistimed and pregnancies that were reported as being unwanted. A mistimed pregnancy was defined as a pregnancy that was wanted by the woman at some time, but occurred sooner than was intended. An unwanted pregnancy was defined as a pregnancy that occurred when the woman did not want to have a pregnancy then or at any time in the future.

Pregnancy intention was determined by asking the question, "Thinking back to *just before* you got pregnant, how did you feel about becoming pregnant?" Those who responded, "I wanted to be pregnant later," or, "I didn't want to be pregnant then or at any time in the future," were placed in the unintended category. Those who responded, "I wanted to be pregnant sooner," or, "I wanted to be pregnant then," were placed in the intended category.

It is important to note that this report examines the proportion of live births that resulted from unintended pregnancy, which differs from the unintended pregnancy rate, as it does not include unintended pregnancies that ended in abortion or miscarriage. Because the PRAMS questionnaire is completed postpartum, there may be recall bias from mothers regarding their pre-pregnancy feelings about becoming pregnant.

> *"Women with an unintended pregnancy are less likely to seek early prenatal care..."*

Unintended Pregnancy in Utah

In 1999, 33.7% (15,500) of live births in Utah were the result of unintended pregnancies. The Healthy People (HP) 2010 goal is that 70% of all pregnancies should be intended. Of the Utah women who reported their pregnancies as unintended, 42.7% said they were using birth control at the time of conception. Despite reporting an unintended pregnancy, 57.3% of Utah women were not using birth control at the time of conception.

Significantly higher rates of unintended pregnancy were noted among women who (data not shown):

- were younger than 20 years of age (84.0%),
- had a less than high school education (56.5%),
- were other than white race (46.8%),
- were of Hispanic ethnicity (45.8%),
- were unmarried (74.2%),
- had annual household incomes less than $15,000 per year (54.9%),
- were insured by Medicaid before they became pregnant (64.3%),

(See Unintended, page 5).

Unintended (from p. 4)

- smoked or drank in the three months before pregnancy (59.7%),
- experienced domestic violence before their pregnancy (62.7%), and
- had a baby within 20 months of their most recent pregnancy (57.5%).

Other significant findings:

- Of women with unintended pregnancies in 1999, 26.4% entered prenatal care after the first trimester compared to 12.9% of women with intended pregnancies. Overall, the Utah rate for late prenatal care entry was 17.9% in 1999.
- Utah women with unintended pregnancies were more likely to receive inadequate prenatal care (41.3%) than women who reported their pregnancy was intended (33.0%) (APCNU Index[6]).
- Women who reported an unintended pregnancy in 1999 were more likely to report moderate to severe postpartum depression (32.2%) than were women who reported intended pregnancies (21.4%).

Contraceptive Use

To explore reasons for not using contraception at the time of conception, PRAMS respondents were asked the question, "When you got pregnant with your new baby, were you or your husband or partner using any kind of birth control?" No birth control use at the time of contraception was reported by 57.3% of women with an unintended pregnancy. The women who responded "no" to this question were asked to identify their reasons for not using birth control. The most common reason for omitting birth control was women thinking that they could not get pregnant at the time conception occurred.

Since behavior after these pregnancies can contribute to future unintended pregnancies, contraceptive use after pregnancy in all Utah women was examined. Postpartum birth control use (3 to 8 months postpartum) was reported by 82.9% of the respondents. The most common reason cited by women for not using postpartum birth control was that they did not want to use it. Utah women who reported their health care provider discussed birth control methods to use after pregnancy were more likely to use postpartum birth control (85.1%) than women whose providers did not (75.1%).

Comments/Recommendations

Women in the United States spend three quarters of their reproductive years trying to avoid pregnancy and it has been estimated that 40% of women will have had at least one induced abortion by menopause.[2] In their report on low birthweight, the Institute of Medicine states, "The best protection available against low birthweight and other poor pregnancy outcomes is to have a woman actively plan for pregnancy, enter pregnancy in good health with as few risk factors as possible, and be fully informed about her reproductive and general health."[7] In order to accomplish, and to exceed, the HP 2010 goal of 70% of pregnancies being intended, public health efforts may include the following:

√ **Health Education**

- Increase knowledge of human reproduction, contraceptive choices and correct contraceptive use.
- Increase knowledge and availability of emergency contraception (EC). The correct use of EC pills reduces the risk of pregnancy by at least 74% if used correctly.[8]
- Promote optimal spacing of pregnancies for healthy outcomes.

√ **Reproductive Health Services**

- Increase dialogue between health car providers and women regarding reproductive health and family planning options. Standard provider practice should include age appropriate discussion of all forms of contraception, along with availability, effectiveness, risks of use, and discussion of the importance of planning for pregnancy for optimal health outcomes with their patients on a routine basis.

√ **Access to Health Care**

- Improve insurance coverage for family planning services.

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Warning Signs in Pregnancy

By Pete Barnard, CNM, MS

Pregnancy is a time of tremendous change in a woman's body and the anatomical, physiological, and biochemical adaptations that occur can sometimes be overwhelming.[1] Most women have many questions about these changes and want to know if what they are experiencing is normal. It is not only the health care provider's responsibility to provide education to their clients about normal pregnancy changes, but also to teach them about the warning signs of potential pregnancy complications.

In early pregnancy, clients should be informed to report the following adverse symptoms to health care providers immediately:

- Bleeding/leaking fluid from the vagina
- Unusual /severe abdominal pain
- Excessive vomiting and diarrhea
- Inability to tolerate food/ liquids
- Fever over 100° F
- Chills
- Pain or burning with urination or backaches to the sides by the kidneys

As the pregnancy progresses, these warning signs should be reviewed and in the second trimester expanded to include:

1. Strong cramps
2. Contractions
3. Decrease in baby's movements
4. Frequent, severe, and/or continuous headaches
5. Blurry or impaired vision
6. Dizziness
7. Sudden swelling of face and fingers
8. Convulsions

Later in pregnancy, the majority of education should include fetal movement counting, preterm labor prevention and early recognition of the signs of hypertension. In early 1970, case reports of pregnancies with decreased fetal activity that preceded fetal death were documented.[2] Studies focused on maternal perceptions of these decreased movements and fetal counting protocols were subsequently established. The optimal number of movements and the ideal duration for counting them continues to be the subject of debate. However, most experts agree that maternal perceptions of decreased fetal movement warrant further investigation. The "count to 10" method is the most commonly used fetal movement count since it requires little time and can be performed at any time during the day.

For fetal movement counting, the woman should begin counting at 26 to 28 weeks' gestation, trying to feel ten movements in one hour. Any movement counts, including a kick, turn or roll of the baby. Further instructions for the woman include:

- √ Choose a time during the day when the baby is usually active. This is commonly in the evening or after a meal.
- √ Record the time you feel the first movement
- √ Count ten separate times you feel the baby move
- √ Record the time you feel the tenth movement
- √ If you do not have ten movements in one hour, try to wake the baby by drinking a glass of juice or changing activity; then lie quietly on your side and repeat the counting for one more hour.
- √ **Call your healthcare provider if you do not feel 10 movements in this second hour.**

A woman's overall perception of decreased fetal activity is important and should always be investigated.

Preterm birth is one of the greatest problems facing obstetrics today, and despite all of the available research and technology, only small improvements in the rate for the year 2000 occurred.[3] Preterm contractions that lead to preterm labor and birth present in a variety of different ways. The warning signs of preterm labor include:

- **Uterine contractions** that occur six or more times in one hour; the abdomen may feel like it is tight and the contractions may be painless or uncomfortable
- **Menstrual-like cramps** that are felt low in the abdomen and may be constant or come and go
- **Intestinal cramps** that feel like gas pains with or without diarrhea
- **Pelvic pressure** described as heaviness in the lower abdomen and pelvis
- **Lower backache** that radiates to the sides or the front

(See Warning Signs, page 7).

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"Unmask the Myths of
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Warning Signs (from p. 6)

- **An increase in vaginal discharge** that may be pink or brown tinged, have a foul odor or is watery
- **A feeling that "something just isn't right"**

It is critical that health care providers educate their clients about the warning signs of preterm labor in order to provide early identification and intervention.

Complications from hypertensive disorders are one of the leading causes of maternal and perinatal mortality in the United States.[4] Abruptio placenta, acute renal failure, disseminated intravascular coagulation and cerebral hemorrhage are all complications of elevated blood pressures. Hypertension is diagnosed when blood pressure is 140/90 mm Hg or greater. The Working Group (2000) lists the following types of hypertensive disease in pregnancy:[5]

- Gestational hypertension (formerly pregnancy-induced hypertension)
- Preeclampsia
- Eclampsia
- Preeclampsia superimposed on chronic hypertension
- Chronic hypertension

Like preterm contractions, hypertension in pregnancy requires early recognition and intervention. Some of the warning signs are:

- Sudden swelling of face and fingers
- Blurry or impaired vision
- Inability to tolerate bright light
- Severe and/or continuous headache
- Epigastric pain
- Weight gain of 2 or more pounds in 1 week
- Proteinuria
- Urinating very little or infrequently
- Tendency to bruise easily

Providing education about the warning signs of potential pregnancy complications is essential for clients to understand the changes that occur throughout their pregnancy. It also enables them to be more proactive in preventing and treating certain pregnancy complications.

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